Abstract of the Disclosure

A cathode electroactive material for use in lithium ion secondary cells, process for producing the material, and lithium ion secondary cells using the cathode electroactive material, wherein the electroactive material predominantly comprises an Li-Mn composite oxide particles with the spinel structure and particles of the electroactive material have an average porosity of 15% or less, the porosity being calculated by employing the following equation:

$$\text{Porosity (\%)} = (A/B)\times 100$$

(wherein A represents a total cross-section area of pores included in a cross-section of one secondary particle, and B represents the cross-section area of one secondary particle), a tapping density of 1.9 g/ml or more, a size of crystallites of 400Å-960Å, a lattice constant of 8.240Å or less. The cathode electroactive material of the present invention is formed of particles which are dense and spherical and exhibit excellent packing characteristics to an electrode, and exhibit high initial capacity and capacity retention percentage at high temperature.